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Financial Understanding: A Phenomenographic Access to Students' Concepts of Credits

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Financial education has become a more popular part of general education in schools. Different social and economic backgrounds as well as experiences influence the students' conceptualization of the same financial phenomenon. Therefore, phenomenography is an appropriate research strategy for investigating students' deeper understanding of financial core concepts. Our research concentrates on 'credit' as a central phenomenon. Thirteen focus groups made up of secondary school students and university students in Germany discussed varying examples of taking out a loan. Systematizing students' conceptualizations, the outcome space consists of four main categories: attitudes, needs, credit terms and calculation. On a deeper level we found further subcategories. The results of our explorative study can guide a chronology of teaching different concepts as well as further research.

1 Introduction

Financial education is considered to be important for the future financial well-being of every student and future citizen. Students and young people have their own money available to them and are exposed to strong marketing as well as choices among complex products. For this reason, various authors and organizations have proposed that students of secondary schools develop knowledge and understanding to enable appropriate judgments and decisions as well as skills for planning around future financial needs.

"Helping young people understand financial issues is important, as younger generations are likely to face ever-increasingly complex financial products and services. They are also more likely to have to bear more financial risks in adulthood than their parents, especially in saving, planning for retirement and covering their healthcare needs." (OECD 2012)

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The improvement of financial education should lead to benefits for the individual as well as for the society as a whole. On one hand, financial education should empower the individual to lead a life in financial wellbeing; and on the other hand, it should increase participation in financial markets with positive welfare effects as well as effects on politics concerning financial regulation (Cole & Shastry 2009, 3). It is not only the goals of individual financial education programs that are, of course, very diverse; broader national and international strategic goals also vary widely (Remmele et al. 2013).

Insofar as financial education is part of school curricula, the contents comprise money and transactions; planning and managing finances; risks; and the broader financial landscape. At one extreme, the individual student is supposed to understand the mechanisms of (financial) markets and have a deeper understanding of macroeconomics as well as political economics. At the other extreme, a very basic understanding of a single product or skills for daily money management is taught. For example, the US Treasury (2010) edited 'Financial Education Core Competencies', which are divided into the five areas of earning, spending, saving, borrowing, and protecting yourself. In 2004, the German Commerzbank edited a canon of financial education (Commerzbank Ideenlabor 2004). As potential target groups, schools as well as other stakeholders (such as organizations in adult education or banks) are mentioned. The topics are similar to the ones found in other standard frameworks. Most proposals on content compositions are centered around typical financial decisions on an individual and not on a social or systemic level (e.g. Commission of the European Communities 2007; Gibson 2009; OECD 2005, 2009).

All standards for financial education include credit as a central topic in financial understanding and part of money management, planning ahead and making financial choices. They are often organized around understanding money; money management; risks; capital resources; retirement planning; and borrowing money. Credit is always

included and indeed centrally relevant in financial education. Decisions on credit are representative for learning requirements on rational decisions in economic education: students should be able to analyze situations, evaluate alternative decisions and shape possible actions (Retzmann et al. 2010, 9). Our contribution focuses on credit from a phenomenographic perspective.

The main aim of this contribution is to study the qualitatively different ways in which credit appears to lay persons based on descriptions of their experience. 'Phenomenography is a research method adapted for mapping the qualitatively different ways in which people experience, conceptualise, perceive, and understand various aspects of, and phenomena in, the world around them' (Marton 1986,31). This is especially important because the students already bring their heterogeneous understanding of financial matters with them into the classroom. Different social and economic backgrounds as well as experiences influence the individuals' conceptualization of the same financial phenomenon. The qualitative variations or similarities of lay conceptions can be used within the teaching strategy and can guide further research as well as the future development of teaching material for further improving financial understanding, but they need to be studied first. This is the motivation for the following phenomenographic research.

The text is organized as follows: Section Two gives an overview of the recent empirical literature relevant for the understanding of lay concepts in the field of financial competencies. Section Three then explains the research design of the empirical study and describes the results. In Section Four we discuss the findings. Finally, in Part Five, we summarize the results and their consequences for future research questions.

2 Survey of the recent literature

With the increasing interest in financial literacy and financial education, a growing number of empirical studies has been published in the last decade. One research line concerns the measurement of financial literacy, which can be seen as a starting point for financial education, but also as being relevant for evaluating different teaching strategies. Other research relevant for the students' understanding of credit can be located in behavioural economics as well as in economic psychology. Previous phenomenographic studies will also be considered.

Financial literacy is about understanding financial markets and their mechanisms, but also about individual financial planning in the broader sense. No general agreement exists on the definition for financial literacy. A broad definition, which is widely accepted, is however the following:

"Financial literacy is knowledge and understanding of financial concepts, and the skills, motivation and confidence to apply such knowledge and understanding in order to make

effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life" (OECD 2011,12-13).

Many studies that try to grasp financial literacy measure knowledge of specific financial products and instruments, e.g. for pension saving. Others look into the understanding of interest rates. Assessments of financial literacy are often based on factual knowledge and less on a deeper understanding. Some questions for the measurement of financial literacy get repeatedly asked in various surveys. For example, three financial literacy questions developed by Lusardi and Mitchell (2006) are used again in later surveys (e.g. Lusardi & Mitchell 2007; Van Rooji et al. 2007; Bucher-Koenen 2009). They measure both numeracy and financial knowledge. Thus the question regarding respondents' understanding of the interest rate was posed as follows: "Suppose you had 100 € in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow: more than 102 €, exactly 102 €, less than 102 €." (e.g. Bucher-Koenen 2009, 12) This kind of question gives only little information about the conceptual understanding that could guide financial behaviour because it is highly related to general numeracy. Other questions in surveys, such as asking for an estimation of the current inflation rate, do not elicit further understanding of the concept, but rather factual knowledge (e.g. Bankenverband 2012).

More recent research in behavioural economics focuses on biases - such as mental accounting; information overload; status quo bias; procrastination; regret; and loss aversion - that influence financial decisions and not only financial literacy as such (for an overview e.g. de Meza et al. 2008). In economic psychology, the relationships between mental accounting and mental budgeting are also studied (e.g. McHugh et al. 2011), and show that the relation between annual percentage rate and total costs is often misunderstood. But also roles of habits and risk aversion have been analyzed (e.g. Loibl et al. 2011) and underline the importance of habits for predicting financial behaviour. The bounded rationality perspective helps to contribute to the understanding of the relationship between knowledge and attitude, as in the analyses of savings, pensions and life insurance by Furnham and Goletto-Tankel (2002). They found that the understanding of those three financial issues is highly correlated and served as a significant predictor of the respondents' respective attitude regarding each.

Previous phenomenographic research has been applied to learning and also to economic phenomena. Pong (1998), Marton and Pong (2005), Pang and Marton (2003, 2005), and Pang et al. (2006) investigated respondents' understanding of 'price'. Davies et al. (2002), Davies and Lundholm (2008, 2012) studied conceptions of public goods, and Birke and Seeber (2012) looked into students'

understanding of wage differences. Pang (2010) as well as Aprea (2012) are so far the only researchers to have applied phenomenography in financial education settings. Pang conducted a learning study at the grade 12-level in Hong Kong and compared two groups. One group followed the lesson plan model and the other introduced the theory of variation (Pang & Marton 2003). The study was able to show that the learning study group outperformed the lesson study group. Additionally, this study gives insights into the outcome space for the phenomenon of financial investments. Concepts included were level of risk, liquidity, expected profitability of investments as well as more macro-related factors such as inflation rate or exchange rate fluctuations.

Recently, Aprea (2012) published the initial results on her study about students' understanding and awareness of the financial crisis. The author categorizes the conceptualizations along three intensities of awareness: awareness of the existence of the crisis; awareness of the background and sources of the crisis; and awareness of their own implication¹. However, this research is more closely related to an understanding of macro-economic factors and less to competency in personal finance. Another example of analyzing financial lay concepts is the work of Leiser and Drori (2005) on inflation. They asked four different groups, including high school students, about concepts on inflation and how those concepts are linked, developing the 'inflation understanding questionnaire' (IUQ). The scholars found that students' depth of understanding varied widely across groups, and they could also identify several misconceptions. Their research is not only important for understanding differences in the conceptions of inflation by different social groups but also for educational interventions.

Thus although there are lines of research with relevance for phenomenography in the field of financial education, however, there is still room for more work in this area.

3 Students' concepts of taking out a loan

3.1 Research design

The didactical impetus of phenomenographic research is the fostering of students' acquisition of domain-specific concepts by reconstructing their everyday conceptualizations in school lessons (Birke, Seeber 2011, 49). Students recognize their own concepts, reflect upon them, and take a step forward to improved domain-specific expertise. In traditional phenomenographic interviews on price (e.g. Pong 1998; Pang & Marton 2005) or wages (Birke & Seeber 2012), the relevant variables in economic theory (e.g. supply and demand) and their coactions are clearly defined. A comparable clearly framed theoretical concept on decisions about loan taking does not exist. Therefore, we have to refer to the above-mentioned competence goal² of rational decision-making considering uncertainty. Students should be able to recognize the taking on credit as an opportunity to allow consumption today while

regarding budget restrictions, opportunity costs and potential risks concerning the ability to pay back the credit regularly in future. This leads to reflections about credit-costs and possible alternatives to loan taking, i.e. postponement or waiver of consumption.

We designed open questions on the phenomenon of taking on credit, with a particular focus on consumer credit. As in other phenomenographic research, no unambiguous answers exist. The reason is that phenomenographic research does not test knowledge but aims at getting a systematic picture of the students' reasoning. We intended to elicit qualitatively different ways of arguing when students reflect on whether someone should take out a loan or not. According to Davies and Lundholm (2012), in the social sciences – as opposed to the natural sciences – it makes sense to ask students for judgments and not only for explanations. The topic of credit in particular seems to be a good example of the intertwining of attitudinal judgments and economic reasoning.

The students had been divided into focus groups and were asked to discuss the following situations:

1. Katja, an apprentice/trainee³, replaces her old TV with a new flat screen at the price of 1.200 Euros. Because she does not have enough money available, she agrees to pay a consumer electronic retailer in instalments. What do you think?
2. Sinan, an apprentice/trainee, moves into a flat on his own for the first time. He buys a new cooker and agrees to pay a consumer electronic retailer in instalments. What do you think?
3. Alex wants to buy an iPhone and asks his buddy Oliver for the money. What do you think?
4. Olga wants to buy an iPhone, too. She overdraws her account. What do you think?
5. After finishing his initial vocational training, Sebastian wants to buy a BMW. He does not have enough money to afford it. He takes out a bank loan. What do you think?
6. After finishing an apprenticeship as a hairdresser, Bianca and her girl-friend take over a hairdresser's shop. They need more money than they have to finance the equipment. They take out a bank loan. What do you think?

Box 1: Focus Group Questions

The questions vary several factors relevant for students' conceptualizations and comprise three groups of two questions in each case. Questions 1 and 2 vary the credit objects (TV vs. fridge and cooker) in similar economic life situations (initial vocational training); questions 3 and 4 vary the creditor (bank vs. friend); and questions 5 and 6 vary the objects again (consumer good vs. capital equipment). The students were not aware of this composition and discussed the scenarios in order.

Typically, phenomenographic research is based either on interviews with single persons or on a focus group design with small groups of participants (e.g. Krueger/Casey 2008). In our setting, students were organized into focus groups of six to nine

participants and discussed all of these questions in about 30 minutes. The interviewers did not explicitly ask them to discuss normative as well as economic arguments, but stimulated the students to reflect on further explanations after having discussed one point of view.

	age group	Number of focus groups
school students	14-15 years old (grade 9)	2
school students	15-16 years old (grade 10)	3
university students	> 18 years old	8

Table 1: Focus Groups Conducted

In total, we conducted discussions with thirteen focus groups, or 89 students altogether. The sample of our first study was made up of 36 9th and 10th graders from a secondary school at the Campus School in Landau, Germany⁴. These students will leave school – depending on their performance and further learning aspirations – after completion of either 9th or 10th grade. The questions target the students' situation, i.e. to leave school and become an apprentice, or situations where they may have personal experience.

In a follow up study, 53 teacher trainees in the field of social sciences at the University of Koblenz-Landau discussed the same questions in groups of five to eight in order to be able to compare their conceptualizations with the results of the first interviews with secondary school students. The latter had no previous economic or financial education in school, whereas the teacher trainees had regularly attended up to two lessons on either business administration or microeconomics. The outcome space (see table 2) as a major finding of our research was initially generated by analyzing the data of the school students' answers, and it was replicated in the follow-up study.

The conversations were recorded and transcribed. The data was analyzed in the form of an iterative content analysis (e.g. Lamnek 2005). The authors coded the answers independently (intercoder reliability). Firstly, they identified respondents' different core arguments while discussing pros and cons of the presented cases. Secondly, they identified superordinated referential aspects in students' arguments. Afterwards the researchers discussed divergent results, and then developed a common outcome space. This analysis is an interpretive process, in which the researchers describe different ways of experiencing the phenomenon. The outcome is an identification of non-overlapping categories and subcategories which reflect various critical aspects of the phenomenon (credit).

3.2. Findings

After having iteratively analyzed the focus group interviews, we were able to distinguish four main non-overlapping referential elements of the outcome space: attitudes, needs, credit terms and calculations. The intentionally open question 'What do you think?' left room for economic-based as well as non-economic-based answers. Thus, one group of arguments concerns non-economic and moral

reasoning for accepting or refusing to take out a loan. The moral and emotional approval or disapproval of certain behaviour falls into this category. In the second category, the answers focus on preferences and the assumed (lack of) necessity of purchase. This category includes the alternative of saving and cheaper options (without calculating). Two subcategories have been distinguished here (see below). The third category focused on credit terms as contractual aspects, including relations to the creditor and awareness of interest rates, but less on other costs. The costs and benefits of different kinds of relationships between the creditor and the debtor are analyzed here. Formal agreements and institutions as well as private relationships and non-monetary costs, such as difficulties within a friendship, are included. The last category concerns calculating future income and expenses and consists of two subcategories. This category comprises not only the question of liquidity and budgeting (income in relation to expenses) (4A), but also includes risk assessments (4B), such as uncertainties in income generation or entrepreneurial risks.

Short Designation	Referential Aspect	Focus	Subcategories
1) Attitudes	The decision depends on <i>non-economic</i> arguments	Focused on <i>affective attitudes and emotions</i>	-
2) Needs	The decision questions the <i>needs</i>	Focused on <i>preferences</i> and the <i>necessity</i> of purchase including the option of <i>saving</i>	A Hierarchy of needs: needs get ranked and cheaper options are discussed (without calculating) B Saving: deferring consumption as handling needs
3) Credit Terms	The decision is related to <i>credit terms</i>	Focused on <i>contractual aspects</i> incl. relations to the creditor and awareness of interest rates	-
4) Calculation	The decision depends on <i>calculative</i> reflections	Focused on <i>future income</i> and <i>expenses</i>	A Budget (income and expenses): calculation focuses on planning present and future budget B Risks: calculation includes consideration of potential gains and losses

Table 2: Outcome Space

As explained above, we conducted the empirical research first with secondary school students and then with university students. The citations are indicated with 'S' for 'school student' and 'T' for 'teacher trainee'. The interviewer is marked as I.

Attitudes

The statements based on affective attitudes and general emotions cover a wide range, and most of

the students in both groups used this kind of reasoning to refuse the decision to take out a loan. Many answers were ethically driven. Students argued that taking on credit is 'ethically tolerable'; or, on the contrary, they stated that they would never do it. The attitudes towards credit could be clustered around 'money comes first' and the importance of having sound financing; or, alternatively, around 'money comes second', the latter following a hedonistic point of view. Not surprisingly, utterances in the sense of 'money comes first' were found much more often than the second group of arguments. A typical statement is:

T: "It is no good living beyond one's means."

Many students see saving as essential, as a general attitude and practice and less as special-purpose. Germany has traditionally a high ratio of savings. However, newer tendencies towards undersaving and overspending can be observed, particularly among young people (private bankruptcy is on the rise) (Bürgel 2012, 10).

Another group of attitudinal statements was related to the feeling the students might have paying back a line of credit in case of loss or technical innovations:

T 1: "Imagine you drive the car into the ground and would still have to pay for it" (question 5) and

T 2: "Imagine in one year there are newer technical features on the market and you would still have to pay for the old one." (question 4)

These reflections did not include any further thoughts on insurance or other economic aspects of credit decisions. The affective dimension was not weighed against a cognitive dimension.

A last group of arguments – in the context of question 3 – concerned the relationship between money and friendship, which was perceived as 'a critical combination':

S: "But I don't think I can ask my friend for 2 € or 50 € or 500 €! No, I do not want that anyway. I do not want his money. I do not want him to have to pay for me." (question 3)

Needs

The focus group discussions among both samples of students were very much centred on needs. Their arguments were related to reflections about luxury goods versus more fundamental needs and followed the logic of Maslow's hierarchy of needs. In a second instance, the search for alternative options provided a focus of discussions. The students distinguished between wants and needs and often suggested searching for cheaper alternatives than the proposed goods. They also had ideas for finding them, like buying a used stove on eBay.

T.: "Well, I find it simply unnecessary to buy a better TV while possessing one - only because it has a flat screen and is bigger. Watching TV is as good with an old one as with a new one." (question 1 – concept 2A)

T: "You don't have to satisfy every wish at once, you could save money and buy it later." (question 1 – concept 2B)

Here, the rationale for taking on credit is related to needs, specifically to the hierarchy of needs and

the logic that taking on credit could be more easily justified for basic needs than for luxury goods (2A).

Usually many alternatives exist for satisfying a need, and the analysis of those alternatives in relation to the determined needs also fall into this category. But after identifying a certain need, savings and thereby deferred consumption were also identified as alternatives to immediate purchase (2B). Within the needs discussion the concept of opportunity costs was singularly applied:

T 1: "When I need (...) then I will not have any more money to spend for other items", and the opportunity costs of saving have also been taken into account:

T 2: "Perhaps I could do without something for a while, which would not hurt me, and thereby put something aside".

Credit Terms

Here, arguments were focused on the contractual aspects of taking out a loan. On the one hand, students mentioned the securities and guarantees a bank requires, the liability of continuous instalments as consequence of contracting with a bank, and the fact that they have to pay interest rates. Typically, this reasoning led to scepticism about raising a credit.

S: "(...) I would ask my mother to pay for a stove, if I want one, and then pay the instalments to my mother. You do not have to pay the instalments to the retailer."

I: "Why would you prefer that? Can you give reasons for that?"

S: "Yeah, if you go to the retailer -, then there are such interest rates -, then this is more expensive. If you ask your parents, then you can -, then it is cheaper for you." (question 2)

On the other hand, Question Three provoked answers referring to the special nature of friendship and to the credit conditions relevant to a bank contract. Looking at friendship itself, students argued with the importance of trust, the length of a friendship and its intensity as factors relevant for their willingness to ask a friend. The risk of losing her or him was described as part of the particular credit terms. The basic ideas were, first: that there is no legal duty to pay back a debt and the debtor could therefore be more willing to default on the payment; and, secondly, that it is an emotional burden to owe somebody money.

S 1: "[...] once you want to spend money, the friend will come and ask you to lend him this money (instead), and if you say no, then he will point to the fact that you bought an iPhone. So you cannot really have fun anymore."

S 2: "It is a risk for the friend, too. Perhaps the other one will simply cut loose. I mean the one who wants the iPhone." (question 3)

Sometimes Question Three led to a change of perspective and the students speculated about risk and their own willingness to loan money to another person. The interviewers then intervened and repeated the question. The statements given previously are not included in the outcome space of table 2.

Calculation

Calculation stands here for budgeting income and expenses, including credit payments in particular. In taking on credit, calculation always has a time component: The long-term commitment requires assumptions of future income. In an extended argument, students would refer to uncertainties and weigh their probability. Because they did not always mention time or uncertainty, the question for the authors was whether there were possible subcategories in the students' contributions. Typical answers within this category were:

S: "Well, it is clever to pay installments. She is still an apprentice and has to pay rent for her flat and similar exigencies, buying food and so on. And if she spends all the money at once (for the TV) nothing remains for living." (question 1)

The above focus is on liquidity in the current private budget. But is it qualitatively distinct from the following statement?

S: "You could set the installments to a real low level. Then you will merely feel them, the current costs." (question 1)

Both students refer to the installments. They are aware of the fact that installments do not consist of a single payment but lead to an enduring liability. In the first case, the student mentions other regular costs like the rent, and the second one speaks of "current" costs. Therefore we did not differentiate between present budgeting and future budgets (4A). We did however further distinguish answers referring to uncertainty of future income, including entrepreneurial risks, because of a qualitative difference between the development of potential scenarios (4B) and mere budgeting. As expected, the case of the future entrepreneur (hairstylist) provoked more reflections on the risk inherent to entrepreneurship than the other questions, although there too the risk of loss had been mentioned (see above). The entrepreneurial risk was clearly seen by students of the secondary school as well as university students. The risk of not generating enough income was underscored many times. Fear and weak entrepreneurial confidence might play a central role here. Risks were only mentioned once in answers to Question One and several times within Question Five. As the expression of an awareness of uncertainty, the students' ascertainment of the difference between secure employment and an insecure future were nevertheless noteworthy. Here are two examples:

S: "(...) I would not do this, because if he loses his job or something, then he will not be able to pay back the money anymore." (question 5)

S 1: "In this case I would more likely take on credit, because if it works well, then they are able to pay (...)"

S 2: "I think it is really risky, because there is a high risk when taking on credit. Because you never know whether it will work or not. There have been a lot of complete flops.

I: "What kind of flops?"

S 2: They took out a loan, started up a business, and then one day they had to declare insolvency." (question 6)

Others

As in other phenomenographic studies (e.g. Pang et al. 2006), not every utterance could be categorized. A very few sentences could simply not be interpreted at all and, as one might expect, others were meant to be funny and very much related to the products mentioned in the questions. Students sometimes simply drifted into side-conversations and some remarks were out of the scope of this study. Furthermore, within one focus group of university students, the discussion switched briefly onto the meta-level. They stressed the importance of the topic for teacher education and reflected on it from the perspective of future teachers.

Within Question Six, attitudes towards entrepreneurship in general played a large role. The students were often critical or underlined how courageous it is to start a business. More rarely, they remarked in a positive tone: "I think it is a good idea to be self-employed". Those utterances did not pertain to attitudes towards credit and are therefore also included in the category 'others'.

Misunderstandings

Some key terms seemed to be unclear or rather have been misunderstood. This is not surprising because the students did not have any prior financial education. For example, secondary school students said: 'If you cannot pay back the loan then you have debt'. Furthermore the concept of 'credit' was sometimes not taken into account at all: 'Either he can pay or he cannot pay.'

Several students argued that it would be better to take a loan for a private car than for entrepreneurial activities and investments. The students did not analyze and compare the income sides in both examples. Students also disliked paying by instalments because of smaller budget flexibility and preferred rather regularly setting aside a certain sum. First, the flexibility is not fundamentally different in those two alternatives; and secondly, they did not take the cost side into account. 'It is better to pay by instalments than to pay a huge amount at one moment' (T). The idea of building up savings is completely missing here.

In the context of consumer credit, students referred to so-called 'zero percent financing', which is heavily advertised, especially for electronic goods. Zero-percent-financing was not further discussed, and the understanding of this instrument remained sometimes unexplored. Other times misunderstandings were evident, as when students said that there would be 'no extra costs for the credit'. And concerning investment credit, one student said, "If there is a risk (entrepreneurial risk) of not being able to pay back, then do not take out a loan" (S). However, certain entrepreneurial investments are simply not feasible without a loan. Misunderstandings might partly be connected to missing knowledge about the financial landscape, but much more related to missing competencies in general economic thinking.

4 Discussion

Hierarchy of Concepts

Typically, teachers focus first on the simplest concept and then go on to the most complex one. But the structure of the outcome space above has to be discussed. The hierarchical order is a condition of quality concerning concepts that have been explored phenomenographically. But the principles of formation seem to be quite vague. Marton (1994, 4427) describes this formation in his basic article on phenomenography. - Referring to a text interpretation of students, he states: "By drawing on the logical relationships found between the different ways of understanding the text, a hierarchy was established between categories of description." Categories are logically related, e.g. described as inclusion or exclusion. Åkerlind (2005, 323) analyses the methods of phenomenography in detail and emphasizes this "hierarchy of inclusive relationships" according to Marton as a typical order.

With regard to the present outcome space: that students argued emotionally or on the basis of moral rules does not require further elaboration of pros and cons, nor deeper analysis of the situation presented. In this sense, this concept, hereafter abbreviated as "attitudes", is the simplest of all discovered perceptions. The discussion of "needs" typically includes attitudinal approaches to problems. An example of an inclusive relationship, for instance, would be citing a cheaper product with fewer features as an alternative.

Considering "credit terms" presumes a decision on needs. Students often referred to these terms after having considered the "needs". Because they had to judge particular situations, the discussion on credit terms depended, at least implicitly, on a determination of what constitutes a true need: Should someone endanger a friendship to buy an iPhone? Should someone pay interest rates in order to buy a TV? Finally, the calculation of income and expenses is on a higher level than the other concepts. It includes both the balancing of needs and the consideration of credit terms when calculating costs.

Nevertheless, the order between calculation and credit terms is quite difficult to determine. Whether to look first at the credit terms and then integrate them into the overall calculation; or to first get an overview on the budgetary situation and risks and then take credit terms into account: there are good arguments for both.

Quantitative Analysis of the Qualitative Data

Comparing the answers across questions gives the following picture (see appendix): in the example of consumer credit for a TV (question 1), students in each of the thirteen focus groups consistently referred to the hierarchy of needs and alternative options (2A) as well as to aspects of liquidity/budget (4A). In the second example, all of the focus groups included the hierarchy of needs and alternative options (2A). Concerning the last question involving

bank credit (question 6), aspects of liquidity/budget were always touched upon, whereas the concept of saving was never mentioned.

So far, no authors have explained the differences among sophistication levels with quantitative analysis of the qualitative data. Birke and Seeber (2012) could at least ascertain that their logically developed hierarchy was pretty much mirrored in the numbers. From the quantitative point of view, we can identify several hierarchies within the groups. Regarding calculative reflections, thoughts on liquidity were more prevalent than reflections on various risks. Those aspects also have an inner logic in the sense that each level requires an understanding of components that came before (Marton/Booth 1997). From the overall quantitatively qualitative perspective, we get a result which is different from the hierarchy constructed by this inner logic: students more often think first in terms of budget than primarily of needs. Credit terms and saving were taken into account as alternatives less often, and reflection on risks least of all.

concept	designation	rank
4A	budget/liquidity	1
2A	needs	2
3	credit terms	3
2B	saving	4
4B	risk	5

Table 3: Order of Concepts Ranked by Number of Use

However, this quantitative-qualitative analysis could be misleading in so far that it is very much influenced by the focus group setting. For further analysis, individual interviews would be required. Secondly, the given examples - as five questions relating to consumer credit and one question relating to an investment credit - also influence the quantity of utterances.

Differences between secondary school students and university students

The school students' and the university students' answers differed in the quantity of the concepts used as well as in the quality of the arguments. Both groups of students most often referred to arguments concerning future income and expenses (liquidity) (4A) as well as reflecting on the needs within the given situation (2A). Interestingly, the university students used more non-economic arguments (1) relative to the secondary school students. Aspects of the credit terms (3) were more important to the secondary school students. Saving (2B), risk evaluation (4B) and financial management competencies were of lesser importance to both groups of students.

concept	secondary school students	rank	university students	rank
1	37%	4	63%	3
2A	60%	2	77%	2
2B	23%	5	31%	5
3	50%	3	58%	4
4A	73%	1	87%	1
4B	13%	6	13%	6

Table 4: Quantity of concepts used

In more than 50% of the cases, the secondary school students' answers were related to one or two concepts, whereas the university students' answers were more complex. In most cases, they took three or more concepts into account. Differences in general education and to a lesser extent a difference in the level of financial knowledge might help to explain this.

No. of concepts mentioned per question	secondary school students	university students
1 concept	16,6%	4,2%
2 concepts	39,8%	16,7%
3 concepts	23,1%	35,5%
4 concepts	9,9%	33,4%
5 concepts	6,6%	8,3%
6 concepts	3,3%	0%
7 concepts	0%	2,1%
sum	100%	100%

Table 5: No. of concepts used per question

University students took a much wider array of alternative options into account. For example, they recognized leasing or renting a car as an alternative to buying a car. The university students showed strong qualitative differences especially within the concept 'calculation'; their reflections were much more elaborate. They included, e.g. the loss in value and considerations about the consequential costs of a fridge. The possibility of drawing up a written contract with a friend was overlooked by the secondary school students, whereas university students took civil law into account. The university students also underscored the financial management competencies and experiences with financial matters a creditor ideally should have; for example, T: "A creditor should have a good overview on the own financial situation, otherwise someone might easily end in a kind of 'debt trap', or T: "you need to know how to make a budget plan".

5 Outlook

None of the students interviewed mentioned any of their own past experience with taking on credit. The students seemed to have nearly no personal experience with credit so far. But first-hand experiences are not a necessary precondition for understanding and might even confuse the issue. Thus, differences between the two different groups of students cannot be explained by varying levels of experiences, but rather by the higher complexity with which one group grasps the phenomena. The examples of the iPhone and BMW provoked long discussions around those goods, but such discussions would not be easy to prevent even when using more neutral key terms such as a 'smart-phone', 'medium-sized car' and indicating price ranges. The entrepreneurship example of a hairdresser turned out to be suitable for secondary school students, but could also be varied for university students by giving an example of a business they could identify more with and imagine starting up themselves.

The depth of understanding varies across the groups, but especially between the university students and the secondary school students. Several misunderstandings could be identified. As in real-life situations, the focus group questions evoked both answers using economic reasoning and answers based on (emotional) attitudes. According to OECD (2012, 14) "[...] financial literacy involves skill in managing the emotional and psychological factors that influence financial decision-making". Thus, for teaching financial education it would appear to be very useful for students to become aware of their own varying levels of reasoning and also learn how their attitudes might influence subsequent behaviour.

Ideally, students come to develop content knowledge as well as transferable reasoning skills. The group of university students might have had prior training in general economics, so that they would be supposed to have better economic reasoning skills compared to the group of secondary school students. However, none of the students had participated in formal financial education. The empirical results nevertheless show a difference in the quality of reasoning between the secondary school students and the university students. The latter showed a qualitatively more economic way of thinking. However, the ratio of non-economic reasoning was relatively high and again demonstrates the need to differentiate between economic and moral reasoning. This is also consistent with exploratory findings from Birke/Seeber (2012), in which elder and more trained students included moral arguments into economic analysis.

The study was conducted on a small number of samples from one German secondary school and one German university, which definitely limits the extent to which results can be generalized. Many different variables can influence the beliefs and attitudes people hold, as well as their knowledge of and experience with types of credit. Further research and interviews seeking to understand the students' subjective experience with credit might diverge from the categories found. It may be possible that in other contexts and with students with different socio-economic backgrounds - especially in other countries - different views as well as personal experiences with credit in general and specific credit products may influence the number and type of categories in the outcome space. For this reason, we recommend extending the research within Germany as well as to culturally different settings. Future research should furthermore be extended by selecting different financial phenomena. Further research could broaden the scope of questions so that more influencing factors are included; credit is seen in different contexts; and the complexity of the topic increases. Macro-economic factors were, for example, not mentioned at all, either in the focus group questions or in the students' answers.

The above-described findings of our research led to an outcome space which reflects a system of students' perception of decisions regarding private credit. Such a system is valuable in a didactical

reconstruction of students' concepts in lessons on this topic as part of financial education. At the same time, it provides a basis for further application of variation theory as a special issue of reconstruction. "The variation theory emphasizes the way in which one learns to discern various entities and their varying features" (Pang 2010, 663). The combination of phenomenographic research findings with the assumptions of variation theory has been tested in several studies with good results (e.g. Pang, Marton 2003; 2005; Pang et al. 2006). In the present context, the variation of students' conceptualizations on credit decisions is one adequate means. However, further research is needed concerning the hierarchy as constructed from the inner logic and individual – as opposed to focus groups – elaboration.

The insights of this study can also be used as a starting point for teaching about credit, especially as they are constructed by applying a variation theory. It will help the teachers in providing information on how students understand the topic and how they develop more complex ways of thinking. The identified elements of the outcome space will help teachers in structuring the reflection and discussion on a conceptual level between the students. The teacher can better evaluate the students' conceptual understanding. Students' prior knowledge will become transparent and help to identify the point of departure for new learning processes.

Although the different subcategories of the outcome space are not that surprising, the discussions' intensity regarding attitudinal aspects of credits is remarkable and useful for learning arrangements. Domain-specific concepts of credit decisions are always rationality bound. Tasks in teaching this issue are to unfold students' attitudes and to separate the latter from objective reasons. Students get aware of their own moral pre-concepts. Through the variation of the different referential aspects (outcome space) the students' get a deeper understanding of the diverse factors which have to be considered altogether.

In our research, for example, the students did not always have a clear picture of total credit costs and this could be an important aspect for deepening understanding. Also misunderstandings have to be studied further and will help in teaching situations to distinguish between the conceptual misunderstandings and missing knowledge of the financial landscape. Additionally, this research can guide the development of teaching material for further improving financial understanding as well as guiding students in using the concepts. For example, costs and benefits of savings and credit could be analysed; or role plays, including comparisons of real life credit costs, could be developed.

The phenomenographic approach cannot substitute for, but rather complements students' performance assessments. Future research should triangulate data from different instruments, – such as from financial literacy assessment inventories mentioned above – in order to provide a fuller picture of students' learning processes and

understanding of financial education, thereby encouraging research-based teaching.

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Appendix:

Students' Viewpoints within Focus Group Discussions on Credit

S=secondary-school students; T=teacher trainees

Group	TV; consumer credit	Stove, fridge; consumer credit	I-phone; friend	I-phone; overdraft credit	BMW; bank credit	Hair-dresser; bank credit
S1	2A, 4A	2A, 4A	2A, 4A, 4B	1, 2B, 3, 4A	1, 2B, 4A	4A
S2	1, 2A, 2B, 3, 4A, 4B	2A, 3, 4A	1, 2A, 3, 4A, 4B	1, 2B, 3, 4A	2A, 4A	4A
S3	2A, 2B, 4A	2A	2A, 3	1, 3	2A, 2B, 4A	4A
S4	1, 2A, 4A	2A, 4A	1, 2A, 3	1, 3	2A, 4A	3, 4A
S5	1, 2A, 2B, 3, 4A	2A, 4A	1, 2A, 3, 4A	3	3, 4B	3, 4A
T1	1, 2A, 2B, 3, 4A	1, 2A, 4A	1, 2A, 4A	1, 2A, 2B, 3, 4A	2A, 4A	1, 2A, 4A
T2	1, 2A, 2B, 3, 4A	2A, 4A	1, 2A	1, 2A, 4A	2A, 3	1, 3, 4A, 4B
T3	1, 2A, 2B, 3, 4A	2A, 3, 4A	1, 3	2A, 2B, 3, 4A	1, 2A, 2B, 4A	3, 4A, 4B
T4	1, 2A, 4A, 4B	1, 2A, 2B, 3	1, 2A, 3	1, 2A, 3, 4A	2A	2B, 4A
T5	1, 2A, 3, 4A	2A, 4A	1, 2A, 2B	1, 3, 4A	2A, 2B, 3, 4A	4A
T6	2A, 3, 4A	1, 2A, 3	1, 2A, 3, 4A	1, 2A, 3	3, 4A	2A, 4A, 4B
T7	1, 2A, 2B, 3, 4A, 4B	2A, 4A	1, 2A, 3, 4A	1, 2A, 3, 4A	2A, 2B, 3, 4A	1, 3, 4A, 4B
T8	2A, 2B, 3, 4A	2A, 4A	1, 2A, 2B, 4A	1, 2B, 4A	1, 2A, 2B	1, 3, 4A

Endnotes

¹ Details of the methodological design including all questions are not published yet.

² At this time we do not distinguish between competence goals and learning goals. We talk of a competence goal because the authors of the cited publication do so. The usual difference in understanding is not relevant in our context.

³ In Germany apprentices are paid by the employer according to tariffs particularly settled for this group.

⁴ The University Koblenz-Landau has a special agreement with this secondary I-school (Realschule+), for cooperating in teacher training and testing new teaching concepts.

⁵ One student has had a vocational training as a banker before starting his university studies.